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NOTE ON THE CHROMOSOMES OF *BYBLIA ILITHYIA* (DRURY)  
(NYMPHALIDAE)

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ABSTRACT

Haploid chromosome number of the nymphalid butterfly *Byblia ilithyia* is 17. This forms the second report in the genus *Byblia*. Attempt is also made to study meiotic details like chiasma frequency and terminalization coefficient based on metaphase I configurations.

THE GENUS *Byblia* IS REPRESENTED IN INDIA by only one species viz. *B. ilithyia* (Drury) which is confined to peninsular region (Wynter-Blyth 1957). Although the chromosome numbers of considerable number of nymphalid butterflies are on record, there is no cytological work on *B. ilithyia*. The present communication, which forms the second report in the genus *Byblia* deals with the chromosome number and also some meiotic details like terminalization coefficient and chiasma frequency based on metaphase I stages.

MATERIAL AND METHODS

The material for study was collected from the fields around A.U. Postgraduate Centre, Nallapadu, Guntur. Testes of adults were squashed in 2% Acetic orcein without prefixation. The preparations were made permanent following the quick freeze method. Counts were made on well-spread metaphase plates. Photographs were taken and camera lucida figures were drawn using X 100 oil immersion lens.

OBSERVATIONS

Metaphase I plates show clearly 17 bivalents with little size variation (Fig. I). Most of the bivalents were dumb-bell shaped with single terminal chiasma; however, cross bivalents with single interstitial chiasma and rings with two terminal chiasmata were also occasionally observed. Precociously separated univalents, which assume the shape of a rod, were also detected sometimes in Metaphase I.

Mitotic plates (Fig. II) show 34 spherical, almost isodiametric bodies which further confirm the haploid number as 17.

### DISCUSSION

De Lesse (1968) reported the haploid chromosome number of *B. acheloia* as 26. The finding of  $n = 17$  in a closely related species like *B. ilithyia* underlines the importance of the role of fusions and fragmentations in the speciation of lepidopterous insects, whose chromosomes are of a holokinetic nature. The chromosome number of *B. ilithyia* deviates remarkably from the modal number ( $n = 31$ ) of the order Lepidoptera and also of the family Nymphalidae (Soumalainen 1969, Ray Robinson 1971).

Soumalainen (1953) opined that in majority of Lepidoptera the bivalents in the diakinesis of spermatogenesis are ring shaped, whereas in oogenesis the bivalents have only one terminal chiasma. But, in *B. ilithyia* by the time spermatocytes reach late diakinesis and early metaphase most of the bivalents assume dumb-bell shape with a terminal chiasma and also the frequency of ring bivalents is very low.

Though the large number, small size and typical spherical form of lepidopteran chromosomes frustrate the observation of their structure and behaviour, an attempt is made to calculate terminalization coefficient and chiasma frequency. Out of 2975 bivalents in 175 nuclei studied in 10 specimens, 162 were cross bivalents, 64 were ring bivalents, 2556 were dumb-bell shaped with only a terminal chiasma and 193 separated early into distinct univalents. The terminalization coefficient ranges from .806 to .960 with a mean of .916 and the chiasma frequency ranges from .823 to .994 with a mean of .922.

Like in *Bombyx mori* L (Maeda, 1939) for which extensive genetic data are available, in *Byblia ilithyia* also, the low genetic recombination is compensated by the large number of chromosomes, which in general seems to be valid for the entire order itself.

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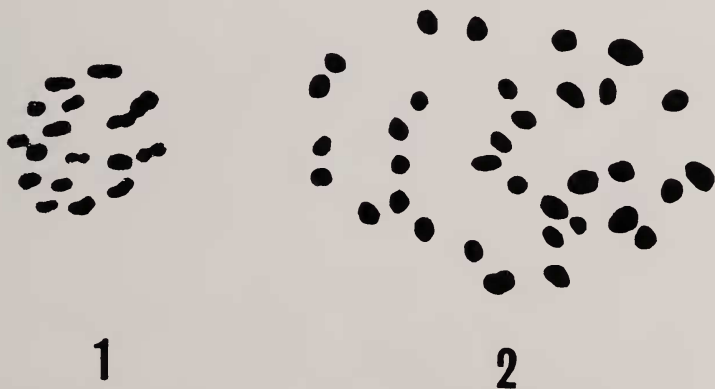


Fig. I.—Metaphase I stage of *B. ilithyia*  
Fig. II.—Mitotic metaphase stage of *B. ilithyia*